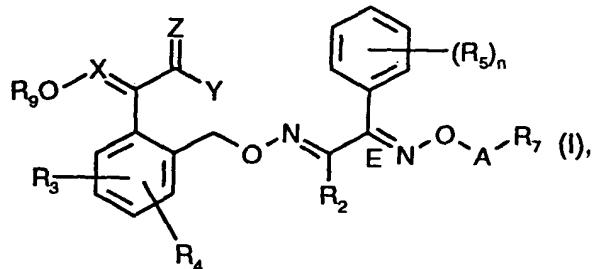


WHAT IS CLAIMED IS:

1. A process for the preparation of a compound of the formula



and, where appropriate, their tautomers, in each case in the free form or salt form, in which either

X is CH or N, Y is OR₁ and Z is O, or

X is N, Y is NHR₈ and Z is O, S or S(=O);

R₁ is C₁-C₄alkyl;

R₂ is H, C₁-C₄alkyl, halogeno-C₁-C₄alkyl, C₃-C₆cycloalkyl or C₁-C₄alkoxymethyl;

R₃ and R₄ independently of one another are H, C₁-C₄alkyl, C₁-C₄alkoxy, OH, CN, NO₂, a (C₁-C₄alkyl)₃-Si group, where the alkyl groups can be identical or different, halogen, (C₁-C₄alkyl)S(=O)_m, (halogeno-C₁-C₄alkyl)S(=O)_m, halogeno-C₁-C₄alkyl or halogeno-C₁-C₄alkoxy;

R₅ is C₁-C₆alkyl, halogeno-C₁-C₆alkyl, C₁-C₆alkoxy, halogeno-C₁-C₆alkoxy, C₁-C₆-alkylthio, halogeno-C₁-C₆alkylthio, C₁-C₆alkylsulfinyl, halogeno-C₁-C₆-alkylsulfinyl, C₁-C₆alkyl-sulfonyl, halogeno-C₁-C₆alkylsulfonyl, C₁-C₆alkoxy-C₁-C₆alkyl, halogeno-C₁-C₆alkoxy-C₁-C₆alkyl, halogeno-C₁-C₆alkylthio-C₁-C₆alkyl, halogeno-C₁-C₆alkylthio-C₁-C₆alkyl, C₁-C₆alkyl-sulfinyl-C₁-C₆alkyl, halogeno-C₁-C₆-alkylsulfinyl-C₁-C₆alkyl, C₁-C₆-alkylsulfonyl-C₁-C₆alkyl, halogeno-C₁-C₆-alkylsulfonyl-C₁-C₆alkyl, C₁-C₆-alkylcarbonyl, halogeno-C₁-C₆-alkylcarbonyl, C₁-C₆-alkoxycarbonyl, halogeno-C₁-C₆-alkoxycarbonyl, C₁-C₆-alkylaminocarbonyl, C₁-C₄-alkoxyminomethyl; di(C₁-C₆alkyl)-aminocarbonyl, where the alkyl groups can be identical or different; C₁-C₆-alkylaminothiocarbonyl; di(C₁-C₆alkyl)-aminothiocarbonyl, where the alkyl groups can be identical or different; C₁-C₆-alkyl-amino, di(C₁-C₆alkyl)-amino, where the alkyl groups can be identical or different; halogen, NO₂, CN, SF₅, thioamido, thiocyanatomethyl; an unsubstituted or mono- to tetrasubstituted C₁-C₄alkylenedioxy group, where the substituents are selected from the group consisting of C₁-C₄alkyl and halogen; or QR₆, where, if n is greater than 1, the radicals R₅ can be identical or different;

R₆ is C₂-C₆alkenyl or C₂-C₆ alkynyl, which are unsubstituted or substituted by 1 to 3 halogen atoms; (C₁-C₄alkyl)₃Si, where the alkyl groups can be identical or different; CN; or an unsubstituted or mono- to pentasubstituted C₃-C₆cycloalkyl, aryl or heterocyclyl group, where the substituents are selected from the group consisting of halogen, C₁-C₆alkyl, halogeno-C₁-C₆alkyl, C₁-C₆alkoxy, halogeno-C₁-C₆alkoxy, phenoxy, naphthoxy and CN;

A either is a direct bond, C₁-C₁₀alkylene, -C(=O)-, -C(=S)- or halogeno-C₁-C₁₀alkylene and R₇ is a radical R₁₀, or is C₁-C₁₀alkylene, -C(=O)-, -C(=S)- or halogeno-C₁-C₁₀alkylene and R₇ is OR₁₀, N(R₁₀)₂, where the radicals R₁₀ can be identical or different, or -S(=O)_qR₁₀;

R₈ is H or C₁-C₄alkyl;

R₉ is methyl, fluoromethyl or difluoromethyl;

R₁₀ is H; an unsubstituted or substituted C₁-C₆alkyl, C₂-C₆alkenyl or C₂-C₆ alkynyl group, where the substituents are selected from the group consisting of halogen; (C₁-C₄alkyl)₃Si, where the alkyl groups can be identical or different; C₃-C₆cyclo-alkyl, which is unsubstituted or substituted by halogen; C₁-C₆alkoxycarbonyl, which is unsubstituted or substituted by halogen; unsubstituted or substituted aryl, where the substituents are selected from the group consisting of halogen, halogeno-C₁-C₄alkyl and CN; a (C₁-C₄alkyl)₃Si group, where the alkyl groups can be identical or different; C₃-C₆cycloalkyl, which is unsubstituted or substituted by halogen; C₁-C₆alkoxycarbonyl which is unsubstituted or substituted by halogen; or an unsubstituted or substituted aryl or heterocyclyl group, where the substituents are selected from the group consisting of halogen and halogeno-C₁-C₄alkyl;

Q is a direct bond, C₁-C₆alkylene, C₂-C₆alkenylene, C₂-C₆ alkynylene, O, O(C₁-C₆alkylene), (C₁-C₆alkylene)O, S(=O)_p, S(=O)_p(C₁-C₆alkylene) or (C₁-C₆alkylene)S(=O)_p;

m is 0, 1 or 2;

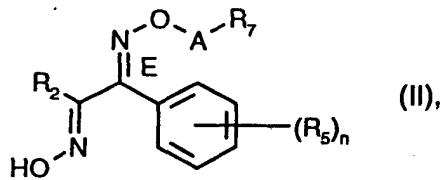
n is 0, 1, 2, 3, 4 or 5;

p is 0, 1 or 2; and

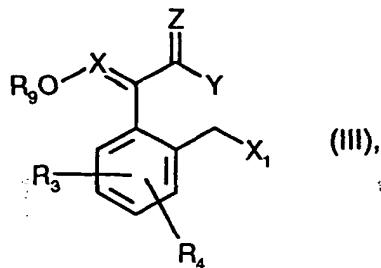
q is 0, 1 or 2,

and the C=N double bond marked with E has the E configuration,
which comprises

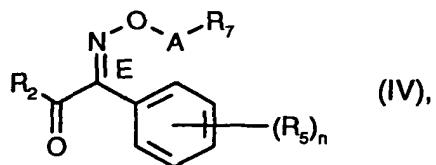
a1) reacting either a compound of the formula



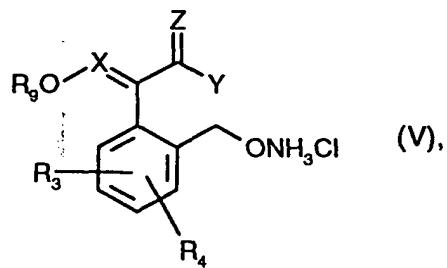
in which A, R₂, R₅, R₇ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, or a possible tautomer thereof, in each case in the free form or in salt form, with a compound of the formula



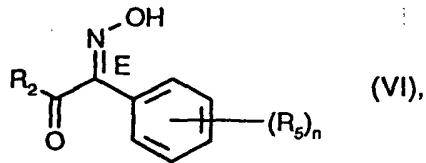
in which X, Y, Z, R₃, R₄ and R₉ are as defined for formula (I) and X₁ is a leaving group, or a tautomer thereof, in each case in the free form or in salt form, or
a2) reacting a compound of the formula



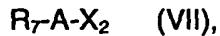
in which A, R₂, R₅, R₇ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, or a possible tautomer thereof, in each case in the free form or in the salt form with a compound of the formula



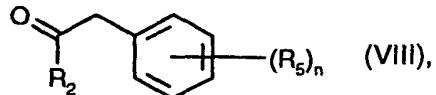
in which X, Y, Z, R₃, R₄ and R₉ are as defined for formula (I), or, if appropriate, a tautomer thereof, in each case in the free form or in salt form, or
b1) reacting a compound of the formula



in which R_2 , R_5 and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, or a possible tautomer thereof, in each case in the free form or in salt form with a compound of the formula



in which A and R_7 are as defined for formula (I) and X_2 is a leaving group, and either further reacting the compound thus obtainable, of the formula (IV), for example according to method a2), or
b2) reacting it with hydroxylamine or a salt thereof and further reacting the compound thus obtainable, of the formula (II), for example according to method a1), or
c) reacting a compound of the formula



in which R_2 , R_5 and n are as defined for formula (I), or a possible tautomer thereof, in each case in the free form or in salt form with a C_1-C_6 alkyl nitrite and further reacting the compound thus obtainable, of the formula (VI), for example according to method b).

2. A process according to claim 1 for the preparation of a compound of the formula (I), which comprises reacting a compound of the formula (II) with a compound of the formula (III).
3. A process according to claim 2, wherein a compound of the formula (III) in which X_1 is halogen is used.
4. A process according to claim 2, wherein a compound of the formula (III) in which X_1 is chlorine is used.
5. A process according to claim 2, wherein the reaction is carried out in the presence of a base.

6. A process according to claim 5, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides and alkylsilylamides.
7. A process according to claim 6, wherein the base is sodium hydride.
8. A process according to claim 2, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.
9. A process according to claim 8, wherein the solvent is selected from the group consisting of N,N-dimethylformamide, N,N-diethylformamide, N,N-dimethylacetamide, N-methylpyrrolidone and hexamethylphosphoric acid triamide.
10. A process according to claim 9, wherein the solvent is N,N-dimethylformamide.
11. A process according to claim 2, wherein the reaction is carried out in a temperature range from about 10° to about 30°.
12. A process according to claim 2, wherein the reaction time is between about 0.5 and about 2 hours.
13. A process according to claim 1 for the preparation of a compound of the formula (I), which comprises reacting the compound of the formula (IV), with a compound of the formula (V).
14. A process according to claim 13, wherein the reaction is carried out in the presence of a base.
15. A process according to claim 14, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides and alkylsilylamides.
16. A process according to claim 15, wherein the base is sodium hydroxide.
17. A process according to claim 13, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.
18. A process according to claim 17, wherein the solvent is selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol and glycerol.
19. A process according to claim 18, wherein the reaction is carried out in methanol.

20. A process according to claim 13, wherein the reaction is carried out in a temperature range from about 10° to about 30°.
21. A process according to claim 13, wherein the reaction time is between about 0.5 and about 2 hours.
22. A process according to claim 1 for the preparation of a compound of the formula (I), which comprises reacting the compound of the formula (VI), with a compound of the formula (VII), and either reacting the compound thus obtainable, of the formula (IV), according to the process according to claim 13, or reacting it with hydroxylamine or a salt thereof, if appropriate in the presence of a basic or acid catalyst, and further reacting the compound thus obtainable, of the formula (II), according to the process according to claim 2.
23. A process according to claim 22, wherein a compound of the formula (VII) in which X₂ is halogen is used.
24. A process according to claim 22, wherein a compound of the formula (VII) in which X₂ is chlorine is used.
25. A process according to claim 22, wherein the reaction of the compound of the formula (VI) with the compound of the formula (VII) is carried out in the presence of a base.
26. A process according to claim 25, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides and alkylsilylamides.
27. A process according to claim 26, wherein the base is potassium carbonate.
28. A process according to claim 22, wherein the reaction of the compound of the formula (VI) with the compound of the formula (VII) is carried out in the presence of a solvent or diluent or of a mixture thereof.
29. A process according to claim 28, wherein the solvent is selected from the group consisting of acetonitrile and propionitrile.
30. A process according to claim 29, wherein the reaction is carried out in acetonitrile.
31. A process according to claim 22, wherein the reaction of the compound of the formula (VI) with the compound of the formula (VII) is carried out in a temperature range of about 10° to about 80°.

32. A process according to claim 22, wherein the duration of the reaction of the compound of the formula (VI) with the compound of the formula (VII) is between about 0.5 and about 2 hours.

33. A process according to claim 1 for the preparation of a compound of the formula (I), which comprises reacting the compound of the formula (VIII), with a C₁-C₆ alkyl nitrite and further reacting the compound thus obtainable, of the formula (VI), according to the process according to claim 22.

34. A process according to claim 33, wherein the reaction is carried out in the presence of a base.

35. A process according to claim 34, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides and alkylsilylamides.

36. A process according to claim 35, wherein the base is sodium methanolate.

37. A process according to claim 33, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.

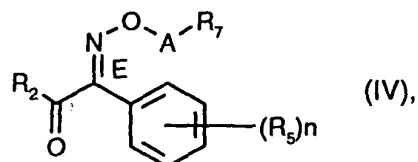
38. A process according to claim 37, wherein the solvent is selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol and glycerol.

39. A process according to claim 38, wherein the reaction is carried out in methanol.

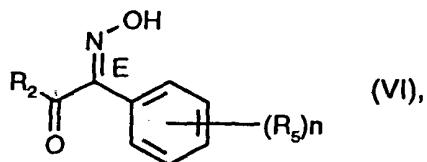
40. A process according to claim 33, wherein the reaction is carried out in a temperature range from about 0°C to about 60°C.

41. A process according to claim 33, wherein the reaction time is between about 0.5 and about 3 hours.

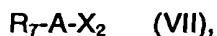
42. A process for the preparation of a compound of the formula



in which A, R₂, R₅, R₇ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, which comprises reacting the compound of the formula



in which R_2 , R_5 and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, with a compound of the formula



in which A and R_7 are as defined for formula (I) and X_2 is a leaving group.

43. A process according to claim 42, wherein a compound of the formula (VII) in which X_2 is halogen is used.

44. A process according to claim 43, wherein a compound of the formula (VII) in which X_2 is chlorine is used.

45. A process according to claim 42, wherein the reaction is carried out in the presence of a base.

46. A process according to claim 45, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamides and alkylsilylamides.

47. A process according to claim 46, wherein the base is potassium carbonate.

48. A process according to claim 47, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.

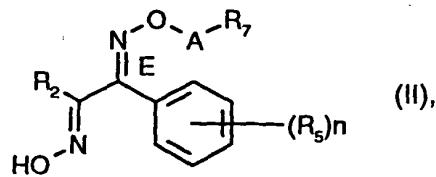
49. A process according to claim 48, wherein the solvent is selected from the group consisting of acetonitrile and propionitrile.

50. A process according to claim 49, wherein the reaction is carried out in acetonitrile.

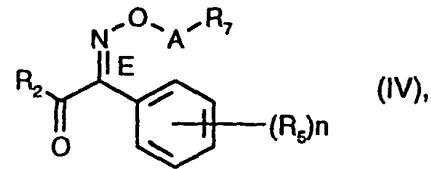
51. A process according to claim 42, wherein the reaction is carried out in a temperature range from about 10° to about 80°.

52. A process according to claim 42, wherein the reaction time is between about 0.5 and about 2 hours.

53. A process for the preparation of a compound of the formula

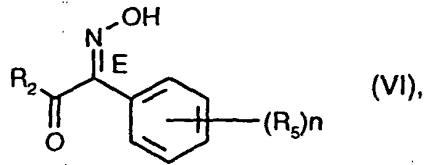


in which A, R₂, R₅, R₇ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, which comprises reacting the compound of the formula

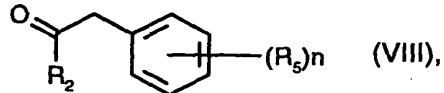


in which A, R₂, R₅, R₇ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, with hydroxylamine or a salt thereof.

54. A process according to claim 53, wherein the reaction is carried out with hydroxylamine hydrochloride.
55. A process according to claim 53, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.
56. A process according to claim 55, wherein the solvent is selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol and glycerol.
57. A process according to claim 56, wherein the reaction is carried out in ethanol.
58. A process according to claim 53, wherein the reaction is carried out in a temperature range from about 20° to about 100°.
59. A process according to claim 53, wherein the reaction time is between about 0.5 and about 2 hours.
60. A process for the preparation of a compound of the formula



in which R₂, R₅ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, which comprises reacting the compound of the formula



in which R₂, R₅ and n are as defined for formula (I), with a C₁-C₆alkylnitrite.

61. A process according to claim 60, wherein the reaction is carried out in the presence of a base.

62. A process according to claim 61, wherein the reaction is carried out in the presence of a base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, hydrides, amides, alkanolates, acetates, carbonates, dialkylamide and alkylsilylamides.

63. A process according to claim 62, wherein the base is sodium methanolate.

64. A process according to claim 60, wherein the reaction is carried out in the presence of a solvent or diluent or of a mixture thereof.

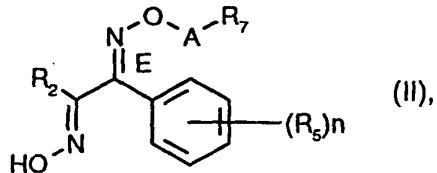
65. A process according to claim 64, wherein the solvent is selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, ethylene glycol and glycerol.

66. A process according to claim 65, wherein the reaction is carried out in methanol.

67. A process according to claim 60, wherein the reaction is carried out in a temperature range from about 0° to about 40°.

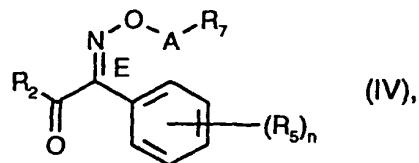
68. A process according to claim 60, wherein the reaction time is between about 0.5 and about 2 hours.

69. A compound of the formula



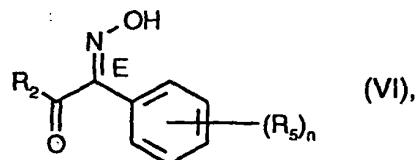
in which A, R₂, R₅, R₇ and n are as defined in claim 1 for formula (I) and the C=N double bond marked with E has the E configuration, or if appropriate a tautomer thereof, in each case in the free form or in salt form.

70. A compound of the formula



in which A, R₂, R₅, R₇ and n are as defined in claim 1, for formula (I) and the C=N double bond marked with E has the E configuration, or if appropriate a tautomer thereof, in each case in the free form or in salt form.

71. A compound of the formula



in which R₂, R₅ and n are as defined for formula (I) and the C=N double bond marked with E has the E configuration, or if appropriate a tautomer thereof, in each case in the free form or in salt form.